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EXAMINER

OMAR, AHMED H

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## DETAILED ACTION

### **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. **Claims 13, 18 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKESHITA (US 2005/01124 15) in view Wang et al. (US 2004/0251872 A1) (hereinafter WANG).

As per claims 13, 18 and 25, TAKESHITA et al. discloses a battery pack (See Fig.1 and Par.2 disclose a battery pack) comprising:

a battery (See Fig.1, Item#2 discloses a battery cell) ; a circuit substrate having a charge/discharge safety circuit and arranged on one end case of the battery (See Par.4 discloses a circuit board on which a plurality of components are mounted to form a protection circuit and

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See Par.63 and Fig.2, Item#4 discloses the circuit board disposed on the outer surface of the frame portion); and an end case in which an external connection terminal is set (See Fig.2, Item#5,42 disclose a cover "end case" and terminals), wherein

the circuit substrate is arranged inside the end case (See Par.63 and Fig.2, Item#4 discloses the circuit board disposed on the outer surface of the frame portion), and the end case is secured to the battery (See. Fig.8, Item#39, 54 and Par.74, disclose a plurality of engaging holes and engaging claws to secure the end case to the battery cell).

However TAKESHITA does not disclose the end case includes attachment holes at both ends thereof extending thorough and each attachment hole includes a step near the bottom thereof and the end case is secured to the battery by screws or coupling pins with heads, each with a screw head, the screw head extending through a respective attachment hole and engaging with the step in the attachment hole in the end case at both ends and tips of the screws being engaged into the end case at both ends of the battery.

WANG discloses the end case includes attachment holes at both ends thereof extending thorough (See Figs.1 and 3, Item#1, discloses two attachment holes on both sides) and each attachment hole includes a step near the bottom thereof and the end case is secured to the battery by screws, each with a screw head, the screw head extending through a respective attachment hole and engaging with the step in the attachment hole in the end case at both ends and tips of the screws being engaged into the end case at both ends of the battery (See Fig.1, Items#5 and Par.21, disclose screw holes in the end case and screws inserted in the screw holes, Fig.1 discloses the screws are locates flush inside the screw hole, which indicates the presence of a step towards the bottom of the end case such that the screw head pulls on it to hold the end case

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to the battery, also see Fig.2, Items#17, disclose screw holes at both ends of the battery for receiving screws through the end case to attach the end case to the battery, the use of a pins is also well known in the art and it would be obvious to use pins with heads instead of screws with heads for the benefit of reducing cost).

TAKESHITA and WANG are analogous art since they both deal with battery packs.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclosed by TAKESHITA with that of WANG by using screws to connect the end case to the battery for the benefit of providing a tighter more secure means of fastening the end case to the battery, such that the cover is less prone to being disconnected from the battery due to external forces, this increased security resulting in a more reliable battery.

3. **Claims 13, 17-18, 24- 26 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKESHITA (US 2005/0112415) in view of EHARA (US 2002/0142195).

As per claims 13, 18 and 25, TAKESHITA discloses a battery pack (See Fig.1 and Par.2 disclose a battery pack) comprising:

a battery (See Fig.1, Item#2 discloses a battery cell) ; a circuit substrate having a charge/discharge safety circuit and arranged on one end case of the battery (See Par.4 discloses a circuit board on which a plurality of components are mounted to form a protection circuit and See Par.63 and Fig.2, Item#4 discloses the circuit board disposed on the outer surface of the frame portion); and an end case in which an external connection terminal is set (See Fig.2, Item#5,42 disclose a cover "end case" and terminals), wherein

the circuit substrate is arranged inside the end case (See Par.63 and Fig.2, Item#4 discloses the circuit board disposed on the outer surface of the frame portion), and the end case is secured to the battery (See. Fig.8, Item#39, 54 and Par.74, disclose a plurality of engaging holes and engaging claws to secure the end case to the battery cell).

However TAKESHITA does not disclose the end case includes attachment holes at both ends thereof extending thorough and each attachment hole includes a step near the bottom thereof and the end case is secured to the battery by screws, each with a screw head, the screw head extending through a respective attachment hole and engaging with the step in the attachment hole in the end case at both ends and tips of the screws being engaged into the end case at both ends of the battery.

EHARA discloses a battery pack wherein the end case is secured to the battery cell using any of a plurality of locking means such as locking protrusions, bolt and nut, caulking, engagement claws, bonding, etc, to secure the end case to the battery cell (See Par.62).

TAKESHITA and EHARA are analogous art since they both deal with battery packs.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclose by TAKESHITA with that of EHARA by replacing the locking hooks disclosed by TAKESHITA with a nut and bolt mechanism disclosed by EHARA for the benefit of providing a more secured attachment of the end case and the battery (a step in the end case is necessary for the purpose of holding the end case to the battery). However EHARA does not explicitly disclose end case includes attachment holes at both ends thereof extending thorough and each attachment hole includes a step near the bottom thereof and the end case is secured to the battery by screws, each with a screw head, the screw head extending through a

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respective attachment hole and engaging with the step in the attachment hole in the end case at both ends and tips of the screws being engaged into the end case at both ends of the battery.

However the use of screws to secure objects is well known in the art and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclosed by TAKESHITA with that of EHARA by replacing the nut and bolt configuration with a screw (the step is necessary such that the screw or bolt head holds the end case to the battery) for the benefit of providing a tighter more secure means of fastening the end case to the battery, such that the cover is less prone to being disconnected from the battery due to external forces, this increased security resulting in a more reliable battery.

As per claims 17, 24 and 30, TAKESHITA in view of EHARA disclose the battery pack according to claim 13, wherein the external connection terminal set in the end case is of the type that establishes or shuts connection between the battery and a device to be connected by a connector on the device side being inserted or removed (See EHARA Fig.2, Items# 45,47 discloses a connection terminal to allow for the insertion of an external device connection to establish connection or break the connection when the device connector is removed)

As per claim 26, TAKESHITA in view of EHARA disclose the battery pack according to claim 25 as discussed above, wherein the coupling pin includes a protrusion at the tip that has the recess in its peripheral surface; the end case of the battery includes a hole to which the protrusion at the tip of the coupling pin fits and with the protrusion being fitted in the hole, the tip of the coupling pin and the end case of the battery are joined together by resistance welding. (See

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EHARA Par.62, discloses use of any locking means such as locking protrusions, bolt and nut, caulking, engagement claws, bonding, etc, to secure the end case to the battery cell).

4. **Claims 14-16, 21-23, 27-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKESHITA (US 2005/0112415) in view of EHARA (US 2002/0142195) in further view of FUKUI (US 2004/0137314).

As per claims 14,21 and 27, TAKESHITA et al. in view of EHARA disclose claims 13, 18 and 25 as discussed above, wherein an electrode terminal of the other polarity is provided on the end case in the battery (See EHARA, Fig.1, Item#23 and Par.35 disclose a negative terminal on the end case in the battery); and one end of a safety protection device is connected to the electrode terminal in the end case of the battery case and the other end of the safety protection device is connected to the circuit substrate (See EHARA. Fig.3, item#15 and Par. 41 and 42 disclose a safety protection device (PTC element); one end connected to the external charge/discharge terminals and the other end connected to the circuit substrate through the positive and negative terminals).

However TAKESHITA and EHARA do not disclose the battery case serves as an electrode terminal of one polarity.

FUKUI discloses a battery pack wherein a cathode terminal is disclosed in the center of the center of the surface while the rest of the surface is an anode terminal. (See FUKUI, Par.37, also see Lim, 2006/0003192, Par.7).

TAKESHITA, EHARA and FUKUI are analogous art since they all deal with battery packs.



It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention as disclosed by TAKESHITA and EHARA with that of FUKUI to use the case itself as an electrode terminal for the benefit reducing production costs associated with having an additional terminal electrode in the battery.

As per claims 15, 22 and 28, TAKESHITA et al. in view of EHARA disclose the battery pack according to claims 13, 18 and 25 as discussed above, a first connection bracket having an upright portion is secured to the end case of the battery case (See TAKESHITA, Fig.2, Items#45, 45a and Par.70 disclose a bracket with an upright portion [45a] wherein the first connection plate [45] is welded to the end case of the battery case); a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case (See Fig.2, Item#44; disclose a connection plate making surface contact with the upright portion [45a] and as shown on Fig.2 is placed on one sidewall of the end case) and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion (See TAKESHITA, Par.70 discloses the upright portion [45a] and the connection plate are welded together, See EHARA, Par.38, discloses the presence of two through holes in the end case for welding).

However TAKESHITA and EHARA do not disclose the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end in the battery.

FUKUI discloses a battery pack wherein a cathode terminal is disclosed in the center of the center of the surface while the rest of the surface is an anode terminal. (See FUKUI, Par.37, also see Lim, 2006/0003192, Par.7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention as disclosed by TAKESHITA and EHARA with that of FUKUI to use the case itself as an electrode terminal for the benefit reducing production costs associated with having an additional terminal electrode in the battery.

As per claims 16, 23 and 29, TAKESHITA in view of EHARA disclose the battery pack according to claims 14, 21 and 27 as discussed above, wherein: second and third connection brackets having upright portions that overlap each other are secured to the other end of the safety protection device and the circuit substrate, respectively; and the upright portions of the second and third connection brackets are welded together through an aperture opened in the end case (See TAKESHITA et al, Fig.2, Items#33, 47 and Par.23, disclose cell negative pole tab “second connection bracket” connected to the PTC ‘safety protection device’ and terminal portion “third connection bracket” secured to circuit substrate. Par.71 and Fig.2 further disclose one end of negative pole tab [33] is welded to the terminal portion [47] , See EHARA, Par.38, discloses the presence of two through holes in the end case for welding).

5. **Claims 19 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKESHITA et al. (US 2005/0112415) in view of EHARA (US 2002/0142195) in further view of Iwaizono et al (US 6,524,739) (hereinafter IWAIZONO)

As per claim 19 and 20, TAKESHITA et al. in view of EHARA disclose the battery pack according to claim 18 but does not disclose the end case of the battery at least in a portion thereof to which the tip of the coupling pin is attached is provided with the same type of material as the coupling pin or that the end case of the battery in a portion opposite the tip of the coupling pin is provided with the same type of material as the coupling pin.

IWAIZONO discloses a secondary battery wherein similar metals are chosen for elements in contact (Col.4 lines 35-43).

TAKESHITA, EHARA and IWAIZONO are analogous art since they all deal with batteries.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention as disclosed by TAKESHITA and EHARA with that of IWAIZONO by matching the material of the coupling pin and the groove in the end case for the benefit of increasing the ability of the materials to withstand repeated contact (See IWAIZONO, Col.4, lines 35- 43).

#### **Response to arguments**

Applicant's arguments filed 01/08/2009 have been fully considered but they are not persuasive.

In response to applicant's argument that amended claims 13, 18 and 25 are patentable over the prior art, please see above rejections.

In response to applicant's argument that EHARA does not provide further details nut and bolt or suggest a screw or a coupling pin to secure the cover or suggest the end case including attachment holes including a step near the bottom. The examiner respectfully disagrees since

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EHARA discloses the use of multiple locking mechanisms and further provides non restrictive examples of such locking mechanisms as "bolt and nut, caulking, engagement claws, bonding, etc" (See Par.62). It is understood that for the bolt and nut to be able to hold the end case and the battery together, there will have to be holes extending through end case for the bolt to be placed through and there will also have to be matching holes on the battery side, there will be a further need for a lip or "step" for the bold head to press against such that when the bolt is tightened it will pull both the end case and the battery together.

In response to applicant's argument that "there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the examiner..., the only reason to combine TAKESHITA and EHARA results from applicant's disclosure and the application of impermissible hindsight". It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Additionally, it is not hindsight reasoning, because the examiner has supplied a reasoned rationale, consistent with KSR, as to why one of ordinary skill in the art would make the combination. The motivation, as stated in the action above, is to: to provide a tighter, more secure means of fastening the end case to the battery, such that the cover is less prone to being disconnected from the battery due to external forces, this increased security resulting in a more reliable battery

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In response to applicant's argument that "there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the examiner..., the only reason to combine TAKESHITA and EHARA in view of FUKUI results from applicant's disclosure and the application of impermissible hindsight". It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Additionally, it is not hindsight reasoning, because the examiner has supplied a reasoned rationale, consistent with KSR, as to why one of ordinary skill in the art would make the combination. The motivation, as stated in the action above, is to: reduce production costs associated with having an additional terminal electrode in the battery.

In response to applicant's argument that "there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the examiner..., the only reason to combine TAKESHITA and EHARA in view of IWAIZONO results from applicant's disclosure and the application of impermissible hindsight". It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Additionally, it is not hindsight

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reasoning, because the examiner has supplied a reasoned rationale, consistent with KSR, as to why one of ordinary skill in the art would make the combination. The motivation, as stated in the action above, is to: increase the ability of the materials to withstand repeated contact (See IWAIZONO, Col.4, lines 35- 43)

Applicant's amendment necessitated the new ground(s) of rejection presented in this office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A Shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE- MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AHMED OMAR whose telephone number is (571)270-7165. The examiner can normally be reached on Monday-Thursday 06:30-16:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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